



Lusail Real Estate Development Company

Health, Safety, Security, Environment, Logistics & Quality Department

Lusail Construction Safety Procedural Forms/Checklists – Chromium (VI) Exposure Prevention

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Chromium (VI) Exposure Protection

Definitions

An “Affected Employee” is one whose work requires their presence in an area containing airborne Chromium (VI) at or above the Action Level.

An “Affected Area” is one where levels of Chromium (VI) are at or above the Action Level.

An “Authorized Employee” is one given explicit permission to be in a specific area or to perform a specific task.

“Exposure” means the airborne Chromium (VI) concentration level that the employee would be exposed to if the employee were not using a respirator.

In a “Regulated Area” the airborne concentration of Chromium (VI) is, or can reasonably be expected to be, in excess of the PEL, and where access is limited to authorized employees.

A “Qualified Person” is one determined to be technically competent by the Director of Health, Safety, and Environment (HSE) to execute a specific task related to Chromium (VI) exposure abatement.

In an “Unregulated Area,” the airborne concentration of Chromium (VI) is less than the PEL, and access is not limited to authorized employees.

Safe Exposure Levels

The Action Level for airborne Chromium (VI) is 2.5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) of air, calculated as an 8-hour time-weighted average (TWA).

The Permissible Exposure Level (PEL) for airborne Chromium (VI) is 5.0 $\mu\text{g}/\text{m}^3$, calculated as an 8-hour TWA.

All levels of Chromium (VI) expressed with units of micrograms per cubic meter of air are 8-hour TWAs.

Employees exposed to Chromium (VI) levels at or greater than the Action Level and less than or equal to the PEL for more than thirty (30) days each year must participate in a medical surveillance program.

Procedure

Risk Assessment

- ◆ Complete baseline assessments for Chromium (VI) levels at each applicable site as soon as reasonably possible after the start of work involving Chromium (VI) materials.
- ◆ Ensure air-sampling methods are in compliance with 29 CFR 1910.1026 through an analysis by an AIHA-approved laboratory.
- ◆ Ensure air sampling is conducted only by a qualified person. A Corporate level HSE Representative must approve the sampling protocol prior to the sampling.
- ◆ Use air samplers that indicate the Chromium (VI) concentration in the affected employees' breathing zone.
- ◆ The quarterly, biannual, and baseline sampling protocols for each site must be approved by a Corporate level HSE Representative.
- ◆ Within fifteen (15) working days of air sampling results being known, post the results in an appropriate location accessible to all employees at each applicable site. Alternatively, the site HSE Representative or Project Manager will notify each affected employee in writing of the results.
- ◆ Until demonstrated otherwise, assume that paint on military vehicles, aircraft, vessels, and other equipment contains Chromium (VI).
- ◆ Changes in the work activities, methods, or materials may indicate the need for a new Chromium (VI) baseline. For example, a change in the ventilation system where work is performed, or a change in the type of military vehicle serviced may elevate the Chromium (VI) levels and require a new baseline.

Engineering Controls

- ◆ Use engineering and work practice controls to reduce and maintain Chromium (VI) exposures below the PEL unless it is demonstrated that such controls are not feasible.
- ◆ If employees are exposed at or above the PEL for less than thirty (30) days per year, engineering and work practice controls are not required to be established.
- ◆ It is prohibited to rotate employees to different jobs to achieve compliance with the 30-day PEL limitation.

Administrative Controls

- ◆ Employees are encouraged to investigate materials substitution and process changes to avoid the use of products containing Chromium (VI). Affected areas will be decontaminated to prevent Chromium (VI) ingestion at the site, contamination of other work areas, and contamination of the employee's home.
- ◆ Only authorized employees are permitted in affected and regulated areas.
- ◆ When Chromium (VI) levels have been documented at or above the Action Level, the associated work areas must be designated as regulated areas.
- ◆ When Chromium (VI) levels have been documented at or below Action Level with air sampling conducted twice in a 30-day period, the regulated areas may be considered unregulated areas. With the concurrence of the Occupational Health Advisor (OHA), medical surveillance and respiratory protection programs may be terminated.
- ◆ Employees exposed to Chromium (VI) at or above the Action Level will be trained in its hazards annually.

Medical Surveillance Program (MSP)

- ◆ All affected employees must be in a medical surveillance program administered by the OHA.
- ◆ Employees exposed to Chromium (VI) levels greater than the PEL for more than thirty (30) days each year must participate in a medical surveillance and respiratory protection program.
- ◆ All medical surveillance examinations must be coordinated with the OHA.
- ◆ Removal from the surveillance program must be done with the concurrence of the OHA.

Personal Protective Equipment (PPE)

- ◆ The use of personal protective equipment (PPE) is implemented when engineering and administrative controls have not reduced the airborne Chromium (VI) concentrations below the PEL.
- ◆ A respirator is the PPE appropriate for reducing inhalation exposures to Chromium (VI). Respirator selection must be approved by a qualified person.
- ◆ Respirator use is part of a respiratory protection program as described in 29 CFR 1910.134, Respiratory Protection; and LCSMP 08-00.
- ◆ All employees wearing a tight-fitting, air-purifying respirator (APR), supplied-air respirator (SAR), or hood will be trained in its use, fit-tested, and medically cleared annually.
- ◆ All employees engaged in painting with paints containing Chromium (VI) must use a respirator with a protection factor of 50 or greater. Examples of such respirators include the full-face-piece APR and the half-mask powered APR.
- ◆ Each APR used in painting must be fitted with a combination cartridge classified for organic vapors and particulates. A P100 High-Efficiency Particulate Air (HEPA) classification and a Volatile Organic Compound (VOC) classification are typically cartridges marked with magenta and black stripes. If using epoxy-based (or two-part paints) with Chromium (VI), use the cartridge specified by the manufacturer.
- ◆ All employees engaged in paint removal activities must wear an APR or SAR with a protection factor of at least 10. Each APR must be fitted with a cartridge classified for particulate protection. A P100 HEPA cartridge is generally marked with a magenta stripe.
- ◆ For all other operations where Chromium (VI) exposure indicates the use of a respirator, consult a qualified person for a recommendation.

Documentation Summary

The following documentation will be maintained in the project files:

- ◆ Exposure monitoring documents.
- ◆ Exposure results.
- ◆ Fit testing results.
- ◆ Training records.
- ◆ Communications with workers.
- ◆ Records of engineering and work practice controls
- ◆ Medical surveillance and medical clearance records will be maintained with due regard to confidentiality

References

OSHA Standard – Chromium (VI), 29 CFR 1910.1026

OSHA Standard – Respiratory Protection, 29 CFR 1910.134

OSHA Standard – Access to Employee Medical and Exposure Records; 29 CFR 1910.1020.

LUS-HSE-WG3-446-001.00, Medical Qualification and Surveillance

LUS-HSE-WG3-446-006.00, Personal Protective Equipment

LUS-HSE-WG3-446-008.00, Respiratory Protection Program

LUS-HSE-WG3-446-010.00, Hazard Communication

LUS-HSE-WG3-446-035.00, Toxic and Hazardous Substances